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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,307	05/18/2007	Kentaro Kubota	076324-0103	5175

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WASHINGTON, DC 20007

EXAMINER

KRUPICKA, ADAM C

ART UNIT	PAPER NUMBER
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1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,307	Applicant(s) KUBOTA ET AL.	
	Examiner Adam C. Krupicka	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/18/2007 and 08/02/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto *et al.* (US Pat. 4,797,183) in view of Kyono *et al.* (US Pat. 4,541,903).

Regarding applicants' claims 1, 2, 3, 5, and 7, Yamamoto *et al.* teach a metallic article which has been electroplated with composite coating (*col. 3 lines 12-14*), which is a Zn alloy composition (*col. 2 lines 36-38*) containing 1 to 30% by weight of ceramic grains such as tungsten carbide (*col. 15 lines 27-36*). It would have been obvious to one of ordinary skill in the art at the time of the invention to select tungsten carbide as the composition for the ceramic grains because it is present by Yamamoto *et al.* as a known effective composition. Further tungsten carbide was selected by Yamamoto *et al.* as one of the ceramic grain compositions used in the examples (*see col. 24 Table 3 d'*).

With regards to the zinc alloy it would have been obvious to one of ordinary skill in the art to utilize one of the zinc alloys exemplified by Yamamoto *et al.* including Zn-Fe (*col. 23 Table 1*). Further it is noted that Yamamoto *et al.* discuss the zinc alloy with respect to automobile steel surfaces (*col. 1 lines 16-22*). Kyono *et al.* also discuss the use of Zn-Fe coatings for use in the automobile industry (*col. 1 lines 6-12*). One of ordinary skill in the art a

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the time of the invention would have further found it obvious to select a Zn-Fe alloy as the Zinc alloy for the coating composition because in addition to being exemplified by Yamamoto *et al.* it has been shown to be effective in the automotive industry by Kyono *et al.*

With regards to the iron and zinc concentrations in the composite coating of Yamamoto *et al.* it would have been obvious to use the Zn-Fe electroplating solution exemplified by Yamamoto *et al.* because it is a known effective composite coating composition as exemplified by plating bath D (*col. 23, Table 1, Symbol D*). While Yamamoto *et al.* do not appear to explicitly disclose the final concentrations of zinc and iron in the composite coating, the plating bath and conditions are disclosed. The plating conditions of Yamamoto *et al.* include 140 g/l of $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$, 30 g/l $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, a pH of 3, a current density of 4 to 200 A/dm² and a temperature of 30 to 60°C, where the ratio of Fe^{2+} to Zn^{2+} would be approximately 0.2 (*see Yamamoto et al., col. 23 table 1 Symbol D and col. 18 lines 56-60*). Kyono *et al.* teach a electroplated Zn-Fe coating having 10 to 30% by weight iron, where the Fe^{2+} to Zn^{2+} ratio, is .10 to .35, the current density is of 80 to 200 A/dm², a pH is 2 to 4 and the temperature of the bath is 40°C (*see Kyono et al., col. 3 line 30 – col. 4 line 30*). Given the similar plating baths and conditions, one of ordinary skill in the art at the time of the invention would have expected the concentrations of zinc and iron in the composite coating of Yamamoto *et al.* to be consistent with the concentrations of Kyono *et al.* and therefore substantially close to the range of 2 to 20% as presently claimed.

Alternatively, with respect to the amount of zinc and iron in the composite coating of Yamamoto *et al.* one of ordinary skill in the art at the time of the invention would have found it obvious to utilize the amounts of zinc and iron used in the Zn-Fe coating of Kyono *et al.*, (10 to

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30% by weight zinc and the balance iron), where the compositional proportions are considered to overlap those presently claimed, because these concentrations are known and proven successful in producing Zn-Fe coatings suitable in the manufacture of automobiles, as also noted above.

With regards to the concentration of tungsten carbide, Yamamoto *et al.* teach the ceramic particles to be present at 1 to 30 weight percent (*col. 15 lines 46-56*), which is considered to give a tungsten weight percent in the range of 0.9 to 30 weight percent based on tungsten making up 93.9 weight percent of tungsten carbide. This is considered to anticipate the claimed range of 1 to 30% by weight tungsten, as set forth in the present claims, with sufficient specificity.

Regarding applicants' claim 4, it is noted that claim 4 further limits the optional corrosion-inhibiting pigment set forth in claim 3. In the instant case ceramic particles were selected and have been addressed above. It is noted that further limitation of an optional member of a group is not considered to be a positive selection of that group member.

Regarding applicants' claim 6, Yamamoto *et al.* teach an organic composition which may be an amine incorporated into the composite coating at 0.1 to 30% by weight (*col. 2 line 36 - col. 3 line 11*). One of ordinary skill in the art at the time of the invention would have recognized the carbon concentration to be a smaller percentage of the total polymer weight and therefore the carbon content of the composite coating would overlap the presently claimed range of 0.001 to 10% by weight. For instance polyethyleneimine is exemplified by Yamamoto *et al.* (*col. 24 Table 2 Symbol Rd*) and has the formula C_2H_5N where carbon is present at 56% by weight, which would convert to an overall weight range of .056 to 16.8% by weight (*considered to cover the range of 0.001 to 10% with sufficient specificity*).

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Claims 4 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto *et al.* (US Pat. 4,797,183) in view of Kyono *et al.* (US Pat. 4,541,903), as applied to claim 1 above, further in view of Kosmos (US Pat. 3,850,766).

Yamamoto *et al.* in view of Kyono *et al.* teach a Zn-Fe composite coating as shown above but do not appear to teach the addition of molybdate salts. However Kyono *et al.* teach the addition of molybdate salts as a brightener and to reduce impurities. It would have been obvious to one of ordinary skill in the art at the time of the invention to add molybdate salts in order to remove impurities and add brilliance to the electrodeposits of Yamamoto *et al.* thereby preventing the impurities from interfering with the deposition of the coating of Yamamoto *et al.* See Kyono *et al.* col. 1 line 66 – col. 3 line 9.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto *et al.* (US Pat. 4,797,183) in view of Kyono *et al.* (US Pat. 4,541,903), as applied to claim 1 above, further in view of Nagashima *et al.* (US Pat 6,180,177).

Yamamoto *et al.* in view of Kyono *et al.* teach an Zn-Fe composite coating as shown above but do not appear to teach the contact of the composite coating of Yamamoto *et al.* with an acidic solution containing cobalt, nickel, titanium, or zirconium, however Nagashima *et al.* teach a surface treatment composition which may contain cobalt, nickel, titanium or zirconium and is acidic (*abstract and for example see treating liquid A, col. 9 line 4-17*). It would have been obvious to one of ordinary skill in the art at the time of the invention to treat the composite coated article of Yamamoto *et al.* with the acidic solution of Nagashima *et al.* in order to impart the coating with high corrosion resistance, improved fingerprint resistance, blackening resistance

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and adhesiveness of a paint coating (*col. 1 lines 10-15*), where it is noted the composite coating of Yamamoto *et al.* may be useful in the automotive industry, as discussed above, and where paint coatings are applied.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam C. Krupicka whose telephone number is (571)270-7086. The examiner can normally be reached on Monday - Thursday 7:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Adam C Krupicka/
Examiner, Art Unit 1794

/JENNIFER MCNEIL/
Supervisory Patent Examiner, Art Unit 1794